RESPONSE UNDER 37 C.F.R. 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 2872

S/N 09/871,130 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	ALLEN ET AL.	Examiner:	R. SHAFER
Serial No.:	09/871,130	Group Art Unit:	2872
Filed:	MAY 31, 2001	Docket No.:	54732US014 (M&G 7780.453USD1)
Title:	OPTICAL DEVICES USING REFLECTING POLARIZING MATERIALS		

CERTIFICATE UNDER 37 CFR 1.8:
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on September 17, 2003.

By: Katherine DeVries Smith
Name: Katherine DeVries Smith

RESPONSE

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This response addresses the Office Action mailed June 17, 2003. Claims 13 and 21-31 are pending in this application.

In the Final Office Action, claims 13, 25, 26 and 31 were rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,751,388 to Larson. Applicants respectfully traverse this rejection.

Interview Summary

On August 21, 2003, a telephone interview was conducted with Examiner Rick Schaefer, Bill Miller of 3M and Kate DeVries Smith of Merchant & Gould. The contents of Larson were discussed in detail. No agreement was reached regarding the claims.

Rejection over Larson

In the Office Action, the Examiner refers to Figure 4 of Larson and argues that the diffusely reflecting polarizer of claims 13 and 26 is taught by the backscattering polarization sensitive scattering element (PSSE) 109.

In paragraph 1 of the final office action, the Examiner states that the features upon which the applicant relies are not recited in the rejected claims. However, Applicants would like to specifically point out that the feature that is being relied up is recited in the claims. Independent claims 13 and 26 both describe a display apparatus including a light cavity, where the light cavity reflects incident light with a first degree of depolarization. (Lines 3-4 of claim 13, Lines 3-5 of claim 26.) The display apparatus also includes a diffusely reflecting polarizer that transmits a component of light having a first polarization and diffusely reflects a component of light having a second polarization. (Lines 5-8 of claim 13, Lines 6-8 of claim 26.) When the polarizer reflects the light of the second polarization it does so with a second degree of depolarization that is greater than the first degree of depolarization. (Lines 8-10 of claim 13, Lines 9-11 of claim 26.) This relationship between the degree of depolarization upon reflection of the light cavity and the diffusely reflecting polarizer is the focus of the arguments for patentability.

In paragraph 2 of the office action, the Examiner states that the claim language does not "preclude" PSSE 109 from Figure 4 of Larson from meeting the claim limitations. The Examiner points to the fact that the polarization-sensitive scattering element 109 transmits the majority of light along one optical axis and scatters the majority of light orthogonal to the optical axis back to the light cavity. These comments do not relate to the amount that the PSSE 109 would change the polarization of the light it reflects. The Larson reference is silent on this characteristic.

As set forth in the Office Action and as discussed in the telephone interview with the Examiner, the Examiner's position is that it is possible that the structure shown in Figure 4 of Larson might meet the limitations in the claim. However, Applicants respectfully submit that the rejection should be withdrawn because there is no teaching in Larson that the structure described in Figure 4 of Larson would meet the claim limitations.

There are three possibilities for the relationships in depolarization upon reflection between the PSSE and the backlight of Larson:

1. Backlight is more depolarizing than PSSE,
2. PSSE and backlight are equally depolarizing, or
3. PSSE is more depolarizing than backlight.

As mentioned above, no teaching in Larson indicates which of these three possibilities is true in Figure 4. Larson does state that the components of the backlight are selected to be non-depolarizing (Larson, Col. 10, lines 10-12), but does not contain any teaching about the degree of depolarization upon reflection of the PSSE.

It is useful to trace the path of light from the backlight 100 through the structure shown in Figure 4 of Larson, as described in Column 9, line 58 through Column 10, line 27 in Larson. Please see the attached copy of a portion of Figure 4 from Larson with light rays A-G added. First, unpolarized polarized light ray A leaves backlight 100 and passes through diffuser 107, then through retarder 108. Light ray B that emerges from retarder 108 is circularly polarized. Circularly polarized light ray B strikes the PSSE 109. As a result, light ray C of a first polarization passes through the PSSE. Light ray D of a second orthogonal polarization is reflected from the PSSE.

Larson does not discuss the degree of depolarization upon reflection from PSSE. In other words, Larson does not discuss whether any or how much of light ray D is <u>not</u> of the second orthogonal polarization after reflection. Larson simply states that the PSSE returns the majority of light having the orthogonal polarization to the backlight cavity. Larson, Col. 4, lines 46-52.

After leaving the PSSE, light ray D of the second polarization goes through the retarder 108 and is converted to circular polarization (light ray E). Light ray E is then reflected from mirror 105 so that the circular handedness of the polarization is reversed. Then light ray F is subsequently converted to match the pass-axis of the PSSE by the next pass through retarder 108 (light ray G).

In summary, the PSSE 109 reflects or backscatters light of one polarization (light ray D) and the quarterwave retarder 108 and the mirror 105 work together to alter the polarization before the light is again transmitted to the PSSE. Of note, it would not be advantageous for light ray D to be depolarized upon reflection from the PSSE and therefore consist of less of the second polarization that would be available for conversion by the backlight and the retarder.

In the telephone interview of August 21, 2003, Examiner Schaefer mentioned his belief that because the PSSE of Larson has diffusing characteristics upon reflection that it would inherently have some depolarization upon reflection. As a result, Examiner Schaefer felt that the degree of depolarization upon reflection from the PSSE would inherently be greater than that of the light cavity, because the light cavity is mentioned as having elements selected to be non-depolarizing. However, Applicants note that the backlight also has a diffusing characteristic, and includes diffusing regions 104. Since both the backlight and the PSSE are diffusing, the fact that the PSSE has a diffusing character does not indicate that it will have a higher degree of depolarization upon reflection than the backlight.

For the reasons discussed above, claims 13 and 26 are respectfully submitted to be in condition for allowance and patentable over Larson. For at least the same reasons, dependent claims 21-25 and 27-31 are also believed to be in condition for allowance.

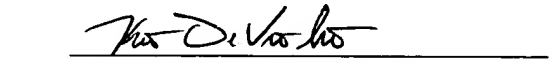
Applicants note with appreciation the indication that claims 21-24 and 27-30 would be allowable if rewritten in independent form.

Favorable action at an early date is respectfully solicited. The Examiner is encouraged to contact Applicants undersigned representative if such contact would be helpful in any way.

Respectfully submitted,

MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300

Date: Sept. 17, 2003



Katherine M. DeVries Smith
Reg. No. 42,157
KDS:PSTdb